Space Weather Forecast

Issued on Saturday, 24 August 2024 at 12:17 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate to High activity with further Moderate flares expected, and a slight chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate activity in the last 24 hours, with seven moderate class flares. The majority of these, including the strongest, was from the small but growing sunspot region on the southeast disc.

There are eleven regions on the disc, with a number of these moderately sized and with some complexity. The region responsible for the strongest recent flare seems to have simplified slightly in recent hours. The largest region is in the southwest disc and also has a a weak delta spot within its intermediates. Relatively limited flaring has occurred from this region so far, but given the complex structure this could potentially change. A region just west of centre disc also has some complexity and was the source of the most recent M-flare. All remaining spots on the disc are either smaller or comparatively magnetically simple.

Two CMEs (Coronal Mass Ejection's) of note were observed, both of which were filament eruptions from a similar location of the southwest disc. The first occurred just after 23/1330UTC which has been assessed as likely missing, passing south of Earth. The second occurred at 24/0400 UTC, and relevant imagery is awaited to conduct a proper analyses but assessments suggest that this CME will also pass below Earth's orbit.

Solar Wind / Geomagnetic Activity: Slow wind conditions dominated. Solar wind speed was background, between 300 and 400 km/s. Interplanetary Magnetic Field (IMF) was Weak to Moderate. The north-south component was Moderate at times and variable, but was predominately negative (southward). Geomagnetic activity was Quiet to Unsettled (Kp1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate class flares are expected with a slight chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: The CME from 23/0100UTC has been assessed as passing mainly ahead of Earth, but with a chance of a glancing arrival late on day 3 (26 Aug). There are no other Earth-directed CMEs. Any influence from the fast winds from the northern coronal holes on day 1 (24 Aug) is now expected to be weak, with mainly slow wind conditions dominating. Mainly Quiet geomagnetic activity is expected, with a chance of a spell of Unsettled to Active day 1 (24 Aug) from any fast wind influence and a slight chance of Active to G1 Minor storms from any CME glance on day 3 (26 Aug).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background, but with a chance of rising in response to any notable flares, especially from the regions in the western disc. This gives a slight chance of

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exceeding the S1 Minor Solar Radiation Storm level.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	80	80
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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